

# CJASN

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#### **On the Cover**

*What's the diagnosis?* Urine microscopy demonstrates needle-like crystals under light and polarization in the upper left and right panels, respectively. These are amoxicillin crystals from a patient treated with 5 days of amoxicillin for a presumed urinary tract infection. This represents a case of asymptomatic crystalluria without acute kidney injury. In the lower panels, a sulfadiazine crystal cast (crystals in granular cast) is noted under light microscopy (lower left panel), which is positively birefringent under polarization (lower right panel). In this case, urine microscopy was performed to evaluate acute kidney injury in a patient receiving sulfadiazine and pyrimethamine for toxoplasma infection. Numerous medications are associated with crystal formation in the urine, due to such factors as inherent drug (or metabolite) insolubility, urine pH (acid or alkaline), and sluggish urine flow rates. To adequately visualize for crystalluria, the urine should be examined under both light and polarized microscopy. The clinical syndromes that develop from drug-associated crystal formation include asymptomatic crystalluria, hematuria/pyuria, nephrolithiasis, and acute kidney injury, which may lead to chronic kidney disease. While many medications have been described to cause crystalluria, those commonly noted include the following: ascorbic acid, acyclovir, sulfadiazine, methotrexate, atazanavir, indinavir, ciprofloxacin, and triamterene. Improving urinary flow rates, stopping or dose reducing the culprit drug, and when possible, altering urine pH to enhance drug and/or metabolite solubility are appropriate interventions to reduce drug-induced crystal formation in the urine. (Image and text provided by Jose Antonio Tesser Poloni, Irmandade da Santa Casa de Misericordia de Porto Alegre, Porto Alegre, Brazil, and Mark A. Perazella, Yale University School of Medicine)